

## FROM TRANSFORMATION TO TRANSITION AS PERMANENT PROCESS. SOME ASPECTS OF ENVIRONMENTAL ISSUES BEING IMPORTANT FOR A SMALL COUNTRY AFTER TRANSFORMATION PERIOD

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**Abstract.** Chances and risks always go along with any change. But the transformation of Lithuania from a former part of a socialist society to an independent liberal market oriented society was a major change not having been experienced before and therefore, a risky and ambivalent process. Explanations can be especially drawn in contrast with the transformation in East-Germany, being very often looked at as an easy and desirable process by especially East-European countries undergoing or having undergone transformation. The actual situation in Lithuania on a general level is in the focus of examination and the meaning for environmental issues and the shaping of environmental topics is being discussed. These are seen having a threefold challenge to cope with: Firstly to focus on adaptation in areas where standards of Lithuanian procedures are high. This can only be set-up, when the orientation of environmental issues is being discussed. So, secondly the most important questions are areas of interest for a future more sustainable environment. Thirdly it is laid open how these complex processes arising from multi-disciplinary problems can be handled. This brings into examination tools for business process modeling coping with complexity.

**Keywords:** transformation, transition, hazardous substances, mobility, sustainable energy, multi-disciplinary approach, business process modeling.

### 1. Transformation and transition

Transformation and transition processes become normal in the globalizing world. Starting points for these processes are very often emerging from western countries and in the last years also from eastern developed countries. These countries set the standards on production and thereby very often the procedures and standards concerning safety, health and environment being strongly correlated with the advancement of production. Because the standards of production were set up in industrialized nations they are based on theories and findings that match their settings (Hamad *et al.* 2010). The most often used theory is the theory of modernization by T. Parsons. This sociological theory tries to explain the superiority of distinctive societies in comparison to others. The modernization theory predicted that modern democracies and market economies are superior. The theory has more or less influenced many transformation and transition processes stimulated by the end of the former socialist countries and by globalization.

Transformation is a special collective term characterizing various changes and conversion processes in the former real socialist countries. These countries were changing from autocratic systems of government with the dominance of egalitarian ideology to more democratic, liberal and market oriented societies with strong individ-

ual orientation. Two examples of transformation processes will be looked at (East-Germany and Lithuania). Different stages took place during these transformation processes lasting for more than one decade.

Transition is a more general term characterizing change trying to catch up with the advanced countries. Not long ago this term was used for East-Asian countries (Japan, Korea, and Taiwan) now belonging to the developed industrial countries. These successful transition processes were interesting for the western industrialized countries because the values and norms in these countries differed considerably from those of the western world, being less individually and more loyally oriented.

To catch up with the developed countries, the countries having undergone transformation have to look for knowledge that can be gained out of transformation and transition processes to make the best out of their position in order to catch up with the developed countries. It has to be looked for processes that in their way help to foster benefitting the countries in different ways.

### 2. Orientation by transformation processes

We will concentrate on structural elements when looking at the both examples of transformation: East-Germany and Lithuania.

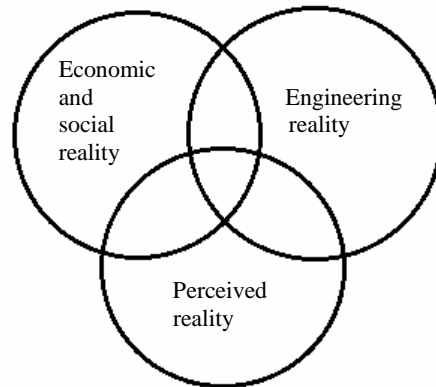
For East-Germany, the German Democratic Republic (GDR), the economically leading country of the former socialist countries of East Europe, the transformation process was mapped out. There was the agreement of May 18<sup>th</sup> 1990 between East- and West-Germany for the creation of a currency, economic and social union, although there had been a previous agreement on a German-German evaluation on the future formation of occupational safety and health, the only field where special regulations could have been taken over (Fröhner 1997). The way of transformation was paved and the target was clear, the system of West-Germany as the standard for the reunified nation. This meant that there were no long lasting processes on how society should work in the reunified Germany, although there had adaptations to be made because of the changes going along with new regulations in the EU. This meant that not only the GDR was changed from an autocratic system, a socialist class society, run by one party, to a multiple party, liberal and market oriented society, but all the members of the former autocratic society found themselves in a new setting (Pollack 1991). East-Germany was incorporated into West-Germany. The members of the eastern society could not get acquainted step by step with the standards of the new setting. The new standards were just taken over. Learning processes could not set free motivational power to bring in own experience and gradually elaborate a target society incorporating occupational safety and health and environmental issues. The transformation was a very cost-intensive approach, which could only be handled by a rich nation like West-Germany.

For Lithuania the situation was completely different. Lithuania emerged as the first independent succession country of the USSR in 1990 after the reconstitution of the Lithuanian state. State-building and institution-building had to be carried out as open processes because the target society was not clear. There were also discussions of a third way in between capitalism and socialism (Gyls 2002). After some years of independence the target society became clearer, being more strongly oriented towards the EU (Austrevicius 2002) and looking for more practical orientation within the frame the EU was setting for countries achieving membership. In the meanwhile the history of the nation became a big topic in discussions in Lithuania, recognizing that it was marked by liberal ideas concerning cultures, ethnic groups and religions throughout its long history. Although Lithuania is a small state by number of inhabitants, there are living several minorities in the state: Russians, Poles, Yiddish speaking Jews, Tatars, Karaites, etc., partly having their own schools after having installed liberal laws in the first phase of state- and institution-building after reconstitution. Lithuania revitalized its own historical heritage and established a political culture looking for integration and not for segregation and for gradual processes. This meant that the society did not start from scratch when accomplishing the transformation processes.

### 3. Outcomes and demands out of transformation processes in Lithuania

Because of the past as a socialist society with an egalitarian setting and because of the experience of setting up a state of its own as a common task of the people there is a

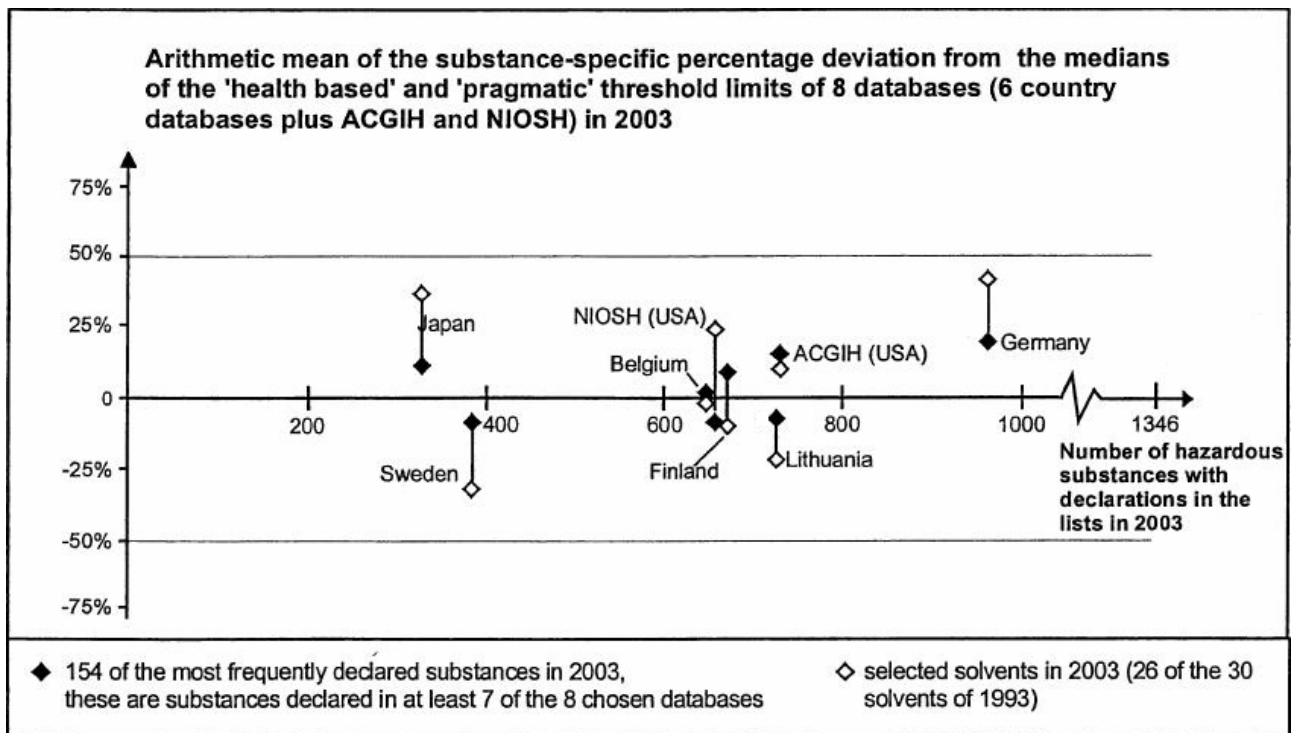
very positive attitude of the citizens towards state issues. The society and its members because of having gone through state- and institution-building because of regained sovereignty are marked by elements of a loyal society, perhaps in contrast to the more individually oriented societies of the western countries. This binding element can still be seen as strong after the phase of transformation. Due to the long lasting ambivalent processes of state- and institution-building contextual reasoning is still very lively in society.



**Fig 1.** Desirable examination of environmental projects in the transition area of Lithuania

Because of the arrangement of the transformation process, Lithuanian decision makers could learn step by step and got acquainted with their new setting. Learning processes could set free emotional power and get those people integrated with the new system. The target society could gradually be elaborated having western countries as example because of acquainted membership of the EU. But strict following of western models has to be questioned because the western model states partly are also facing severe problems after the crisis in 2009 and the slow-down of economy. The importance of directly taking over developments of the west does not seem to be so promising anymore.

Therefore, transition processes ahead cannot be seen as mapped out. The way of transition is not paved and the targets are not so clear as before. It cannot be assumed any longer that many problems will be solved by a future high growth rate of the gross national product, as it was assumed in the decade before. The orientation of targets is not a normal thing anymore. This does not mean a restart of transition. But new standards incorporating new targets have to be established in the light of the new circumstances. Now society should turn back to establishing its own tasks and targets. The social and economic reality has to be considered when setting up national programs or activities. The limited financial resources of the state and social reality as shown by the high unemployment rate of young people have to be considered. The impact of projects on reducing the high unemployment rate has to be taken in consideration from the beginning. Because of limitation of state assets the perceived reality of the people must also be in the focus when establishing or setting up new targets and projects. Therefore, not only the engineering reality is shaping environmental projects but also the perceived reality in the light of the economic and social reality. For new projects a multi-disciplinary approach is needed, lying in the intersection of these three realities as shown in Figure 1.



**Fig 2.** Comparison of the Lithuanian list for hazardous substances after transformation process in the light of small developed countries of the EU and large developed countries

#### 4. Some areas to be looked at

When venturing generalization as it has been done before, restrictions have to come up to give some hints that have a direct contact to engineering projects. But before remarks have to be made concerning perspectives of society, because environmental projects last a very long time if they are installed by technology. The here assumed crude perspectives for the future are seen simple and cannot easily be questioned: The national resources have to be protected, used and developed. Energy should be produced in a more sustainable way, mobility will be still desirable and products still have to be produced in a physical way. These assumptions are seen as concrete for examples given here. But for real projects targets have to be scrutinized and refined. Having this in mind, we can turn to the area where Lithuanian standards are high.

#### 5. Working environment concerning hazardous substances

In the time when the orientation of the Lithuanian society was not clear, a survey was conducted laying open the deficits of the working environment concerning the safety and health systems in companies based on the than Lithuanian standards directly derived from Russian standards (Richters *et al.* 1995) having in mind the resources of the work force. Obviously, the employees did not expect at a significance level of  $\alpha < 0.05$  a positive development of the occupational safety and health system, meaning that employees were skeptical about their situation and the ability of the entrepreneurs to change the setting. All employees, except one, did not feel enough informed about possible work

related health complications. Meanwhile Lithuanian standards concerning hazardous substances have been gradually developed to a high level in comparison with western countries (Vasarevicius *et al.* 2010), seen by a large set of substances an international comparison was based on (Fig. 2). The Lithuanian standards are low and the number of declared substances is high (Fröhner *et al.* 2009).

It can be stated on a general level that the Lithuanian authorities have gradually developed an approach for their hazardous substances list that does not take place at the expense of human capital. But there is lacking a new survey concerning the working environment in the light of changed circumstances. A survey has to be accomplished to get to know the perceived reality of the work force to refine targets. Furthermore, it is important to bridge the gap in between paper version of the hazardous list and reality. Therefore, considerations have to be set-up to standardize the regulations of measuring the concentration of hazardous substances in the work-places because of two reasons: Firstly, the different interaction of members of the workforce with the sources of substances, and secondly, the involvement of the differentiation of load of work on members of the workforce and the thereby of sometimes high induced activities on the cardio-vascular system of the body. This approach would help to get the employees more involved with the production system, stressing that they are cared for and reduce risks, because of not frequent measuring.

#### 6. Mobility tangling living and working environment

Mobility is one of the achievements going along with the transformation of society and the reestablishing of the independent Lithuania. There is no doubt that this

achievement will still be seen as desirable in the near future. On the other hand the society has to be protected from the noise going along with the common use of this achievement. Activities had been carried out to protect society especially by noise barriers as shown on this conference (Baltrenas *et al.* 2010). The more noise barriers are going to be erected the more landscape management and gardening come into focus to integrate these elements in suburban and living areas. The establishing of these elements should be erected in direct cooperation with the citizens. In the short run the elements used for these activities should be produced by regional or national entrepreneurs. Therefore, multiple uses of these elements have to be ensured by analyzing and designing processes taking different requirements into consideration. Solid analyzing and designing will lead to stable demand for elements and sum up to effects on the labor market when these elements are being produced by national entrepreneurs, as discussed before.

The high demand for mobility will also lead to more people working in the maintenance for the street system putting them into more and more dangerous positions because of increased traffic and reduced funding to build new streets making construction zones more likely to occur. These zones have a prevalence of fatalities to happen. Serious concerns have to be brought to attendance to reduce especially dangerous situations when there is a shift from construction to rehabilitation of existing highways as they age (Ray *et al.* 2010). This can be anticipated for Lithuania and measures should be established beforehand.

## 7. Contextual reasoning concerning sustainable energy

There is no doubt that the importance of sustainable energy will increase in the years to come. Wind, biogas and wood are approaches with potentials being in accordance with the countries natural resources, in view of the fact that wood as a natural resource is to some amount already used for decentralized heating. To build systems based on wind and/or biogas will require a lot of financial resources to install technology and infrastructure to get the best benefit also in combination and enlargement with the existing infrastructure. Programs and projects are going to be set-up for these developments to boost the integration of separate installations capable of systematic combination. Funding of these processes has to go along with explanations and activities to get to know the perceived reality of society concerning this field of environmental investment. The public will ask for explanations for funding of these processes. On the other hand there is a chance to give regional or national entrepreneurs a perspective when they engage themselves in technology as part-, element or even system producers. This has to be achieved to a certain amount, even if technology has to be imported because of lack of technology competence. The installation or enlargement of infrastructure will be cost and labor intensive. The ladder one will boost regional or national construction industry, so it will be less in the focus for explanations.

Installed wind and biogas systems have to be maintained after having been erected. The data from the UK con-

cerning accident and fatality trends in maintenance of wind power generation systems (Imrhan *et al.* 2010) show that maintenance activities should not be neglected when setting up a systematic national approach. Also biogas systems are not free of accidents and fatalities when being erected as known from reports about fatalities when erecting biogas systems in the surrounding of home-town. Caring for the work-force has to become integrative part of establishing these systems helping to get industrial firms more service oriented.

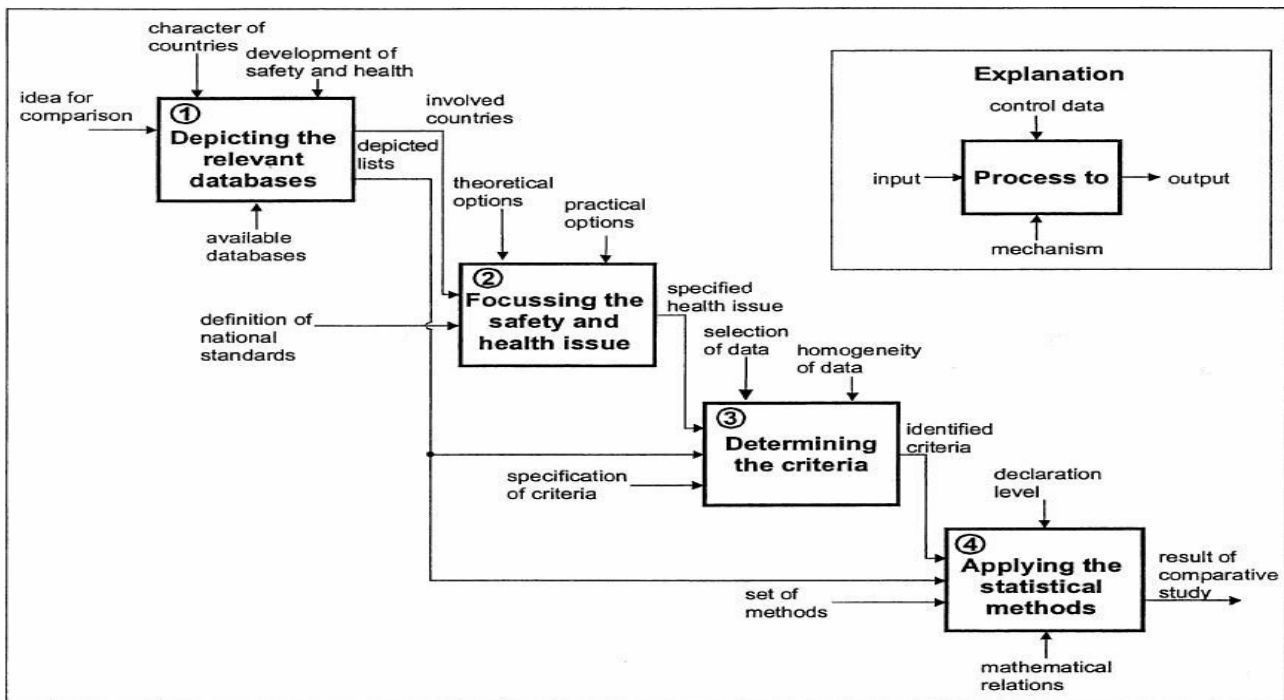
Wind and biogas systems have an impact on their surroundings, on the living environment. Complaints of neighborhood are: noise, shadows and increased traffic activities, the latter ones especially concerning the placement of biogas units. All this can be at least reduced by the placement of the wind and biogas systems.

## 8. Methods to follow-up complex processes

When taking initiative to get acquainted with complex processes of different background as discussed before, it could be of some help to have a frame that gives orientation. This frame is seen in presenting the processes in a way that they can be overseen, the assignments of restrictions become clear and the basic elements can be looked at etc. This has normally to be installed for every process in a distinctive way. It is important to show by an example how it can be accomplished.

It will be shown how the process to install the comparison of international lists in Figure 2 was set up. By Figure 3 can be seen that the comparison process is complex, many decisions have to be met and many influences have to be cared for to get valid and reproducible results. The process consists of 4 sub-processes, being presented here in a clear form (Fröhner *et al.* 2009), using the SADT-method (IDEFO in American terms). The first sub-process is: Depicting the relevant data bases. The countries for the comparison were selected, small countries of the EU and large industrialized countries, due to the idea of the comparison. The next sub-process is: Focusing the safety and health issue. The standard is seen in protection against hazardous substances including protection against agents with some adverse effects. The third sub-process is: Determining the criteria. This is done by selecting the 8 hour weighted average occupational exposure limit as the most often used criteria. The last sub-process is: Applying the statistical methods. This is accomplished by applying the mean average deviation. The outcome of applying these sub-processes on the selected data is shown in Figure 2.

The SADT-method can picture complex processes and by this can give a clear outline of activities that have to be managed or cared for. Each sub-process converts an input into an output by a selected mechanism regulated by control-data. The output of a sub-process may be an input at least to one process. But an output can also give a new set of control data by a back loop to a sub-process already having gone through for the first time. For every sub-process several inputs, different control-data and different mechanisms can be defined.



**Fig 3.** Business process with SADT-method (IDEFO Technique) to install a comparison of international lists of hazardous substances

By this business management approach can be assured that all restrictions will be taken into consideration when this process is being applied. This seems especially necessary when complex processes are set up and are being followed up by different persons at different times. On a second level the particular activities of management can be further characterized and depicted in detail, if this is seen necessary. The SADT-method realizes a graphical description of complex structures showing an overview of the whole process and thus making the data-flow transparent.

Furthermore, it seems very often necessary to get a structured approach towards the problem by having a closer look at the causes and the effects of an area going to be examined. Cause and effect diagrams can help anticipating planning problems and by systematic evaluating the possible obstacles being in the focus. This can be realized by summing up anticipated causes and effects on a general level being the ground for a more structural approach to set up business process modeling.

## 9. Conclusions

The Lithuanian approach to setting exposure limits for hazardous substances shows, that the authorities were sticking to their own experience and were looking for and integrating new orientation. This also meant to shift from the Russian ideal type of approach for setting exposure limits to the more pragmatic oriented approach of the Western and Nordic countries taking health related effects occurring on work-shop level into consideration. Lithuania as a small country with very limited resources to develop and establish own safety standards found its own way to install a list for hazardous substances benefitting from the knowledge and the standards of the developed nations not

neglecting its own experience. This approach of gradually elaborating targets and processes has to be expanded on fields that are less grounded on own experience, what has to be substituted. Therefore, reality has to be taken into consideration to a higher extent than before.

So, it has to be looked at as important that environmental projects do not only have an objective but also a subjective dimension, especially in times of restricted financial resources and obvious problems concerning social reality. In this situation environmental engineering has to extend its justifications, explanations and take into consideration the interests of all parties being involved in the designing process, being stake-holders. Values of citizens being affected have to be raised, considered and integrated into the process. Evaluation of the effects of the installed environmental engineering projects should be installed and perhaps repeated after years.

The proper installation of environmental engineering projects can be a mediator in between society and institution activities. Shifting towards activities in this direction should be followed in the upcoming years. This could serve as a steady element of society to install efficient patterns helping to have accepted institutions in a modernized society.

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